REMARKS

This paper responds to the Office Action dated November 23, 2004.

Drawings. Reference character 240 has been added to the specification at paragraph 22. This is not, of course, adding new matter as the reference character was in Fig. 2 as filed.

Claim amendments. Claims 2, 3, and 4 have been amended solely as to form to more closely conform to US practice.

Art rejection. Claim 1 has been rejected over a US pat. no. 6,000,200 to Chin ("Chin").

Chin is cited for the proposition that it is known to pass a message from one FC-AL (fibre channel arbitrated loop) node to a second node, to request that the second node perform a software restart. But this is well known, and was indeed discussed at some length in the application as filed:

> [0009] Where the private connection 80 of Figure 2 is not available, an alternative approach to the problem of resetting hung servers which avoids the necessity of private interconnections described earlier, is to use the FC-AL connections themselves to deliver reset instructions between servers.
>
> [0010] In the case of Figure 2, the servers on the FC-AL (40) are known to co-operate in a "buddy system" wherein at system initialisation each server is twinned with another so that each server has only one buddy and is itself a buddy to that server. Each buddy uses heartbeat monitoring on the FC-AL (40) to assess the status of its buddy.
>
> [0011] However, whilst heart-beat monitoring on the FC-AL (40) of the connected buddies enables a server to detect if its buddy has hung, the normal FC protocol and FC-AL topology do not enable a server to reset a hung buddy. For instance in Figure 2, without the connection 80, there is no way in which Server A (20) can access the reset controller and watchdog (300) of Server B (30) to reset Server B (30) if needed. Consequently, if Server A (20) detects that Server B (30) is malfunctioning, it can only send a message to Server B (30) alerting it of its hung state and advising Server B (30) to take the appropriate remedial action. However, if Server B (30) is so badly hung, that it cannot alleviate its own situation, then Server B (30) will remain hung, because Server A (20) cannot reset it.

As Chin admits, the reinitialization of Chin is "in effect" (col. 7, line 26) a reset or reboot command, but is not the same thing as a reset or reboot command. The problem described in the specification is that if the server to be reset is "so badly hung" then it will not be able to "alleviate its own situation." And indeed Chin has this very problem.

It is all very well to suggest that one node on an FC-AL can send a message to a second node on an FC-AL requesting that it restart its own software. But if the second node is "badly hung" it will not even respond to this message, and will "remain hung." It is precisely this problem (the problem of cited reference Chin) that the present invention seeks to remedy.

It is thus instructive to turn to the language of Claim 1, which is:

> A processor resetting apparatus comprising:
>
> a fibre channel arbitrated loop (FC-AL) interface arranged to receive a frame containing an indicator of a reset command for a server including a processor associated with said resetting apparatus; and
>
> reset means, responsive to said reset command, to issue a reset command for resetting said processor.

The claim uses the term "reset means," and the reset means is (per 35 USC section 112, last sentence) the structure set forth in the specification and the equivalents thereof. The structure set forth in the specification is seen for example in Fig. 3, namely the HASC 310 which passes a reset signal 490 to a reset controller 300 and which in turn passes a reset signal 530 to the CPU 180. There is nothing like this in Chin, at least, the Examiner has not pointed to it and the undersigned is unable to see anything like this in Chin. Indeed Chin actively teaches away from this, in teaching that the way to pass a reinitialization request from one node to the next is by simply passing a message from one node to the next, hoping that the node that is meant to receive the request will receive it and will then duly reinitialize itself. But if that node is "badly hung" it will not be able to "alleviate its own situation."

Chin neither anticipates the claim nor renders it obvious, as Chin actively teaches away from the disclosed reset structure of the "reset means" of the claim.

In an apparent attempt to overcome the fact that Chin lacks anything like the claimed "reset means," the Examiner states without any support whatsoever that it would supposedly have been obvious to add all of the disclosed reset structure of the claimed "reset means" to Chin, thereby supposedly rendering the claim unpatentable. The undersigned disagrees with this view, and motivated by the case of *In Re Ahlert and Kruger*, 165 USPQ 418 (CCPA 1970) the undersigned hereby challenges this view and asks whether the Examiner can show support for this view.

The Examiner's attention is also directed to the last few words of the claim, namely that what is accomplished is "resetting said processor." In Chin, what gets reinitialized is the *software*. The term "processor reset" is a term with particular meaning, and the Examine cannot and should not attempt to twist that meaning (having to do with a hardware

interrupt to the processer) to somehow fall within the reinitialization mentioned in Chin.

Reconsideration of the rejection of claim 1 is requested, and likewise for claims 2 and 3 which depends from claim 1.

Claim 3 is:

> The apparatus of claim 1 wherein the apparatus comprises one of a separate component of a server motherboard or an integral element of a server motherboard.

The Examiner states that this limitation may be found in Chin at col. 5, line 66 to col. 6, line 2. The undersigned has diligently studied the specified columns and lines and is unable to find this limitation there. The undersigned has likewise studied the entirety of Chin and is unable to find this limitation anywhere in Chin. It is requested that the Examiner point out by page and line where this limitation can be found, or to withdraw the rejection.

Claim 4 is:

> The apparatus of claim 1 wherein said FC-AL interface is arranged to receive a frame indicative of a lock request for a resource and wherein said apparatus further comprises:
>
> means for receiving from said associated processor an indicator of a resource to be locked;
>
> means for causing a corresponding indicator to be stored;
>
> means for causing said stored indicator to be deleted when an associated resource is unlocked;
>
> means, responsive to receiving a lock request frame originating from another processor, for checking any stored indicators for a matching locked resource;
>
> means, responsive to detecting a match, for transmitting a frame indicative of said resource being locked by said processor to the originator of said lock request; and
>
> means, responsive to not detecting a match, for transmitting said lock request frame to the originator of said lock request.

The Examiner admits that Chin is wholly lacking in any of the limitations of claim 4. In an attempt to provide the missing limitations, the Examiner cites US pat. no. 5,892,954 to Tomas et al. ("Tomas"). So far as the undersigned can discern, Tomas merely stands for the proposition that lock files are known. The applicant, however, acknowledged that such files are known, for example in Fig. 2, reference character 240 ("lock manager").

But claim 4 does not merely recite a lock manager. Claim 4 is limited in that the apparatus includes the reset means of Claim 1 and also the various lock means of Claim

4. Apparently recognizing that neither of Chin or Tomas suggests such a combination, the Examiner states, without support, that it would supposedly be obvious to add a lock manager to the reset means of Claim 1 (and as discussed above, Chin only discloses a software reinitialization approach, not a reset structure). The undersigned disagrees with this view, and motivated by the case of *In Re Ahlert and Kruger*, 165 USPQ 418 (CCPA 1970) the undersigned hereby challenges this view and asks whether the Examiner can show support for this view.

New claim 5 is:

> A processor resetting apparatus comprising:
>
> a fibre channel arbitrated loop (FC-AL) interface arranged to receive a frame containing an indicator of a reset command for a server including a processor associated with said resetting apparatus; and
>
> a reset controller, responsive to said reset command, to issue a reset interrupt command for resetting said processor.

This new claim has been added to specifically set forth that the reset to the processor is an interrupt (i.e. a hardware operation applied to the processor, not a software operation carried out within the processor). Chin not only does not disclose this but teaches away from it, as discussed above in connection with claim 1.

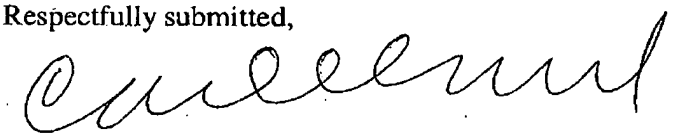
New claim 6 is:

> A method for use with a system comprising first and second servers communicatively coupled over a fibre channel arbitrated loop (FC-AL) communications channel, each server comprising an FC-AL interfiace coupled to the FC-AL communications channel, and arranged to receive a frame containing an indicator of a reset command for a server including a processor associated with said resetting apparatus; and a reset controller, responsive to said reset command, to issue a reset interrupt command for resetting said processor; the method comprising the steps of:
>
> at the first server, sending a frame over the FC-AL communications channel containing an indicator of a reset command addressed to the second server,
>
> at the second server, receiving the frame over the FC-AL communications channel containing the indicator of the reset command adddressed to the second server;
>
> at the second server, in response to the receipt of the frame containing the indicator of the reset command, issuing a reset interrupt command to the processor of the second server;
>
> whereby the processor of the second server is reset.

This new claim has been added to more particularly set forth method coverage of the invention. As the Examiner will appreciate, this claim distinguishes quite clearly over Chin which merely recites a software procedure in the second node, and which teaches away from a reset interrupt of the type set forth in the claim.

Reconsideration is requested.

Respectfully submitted,



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